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09/727,748	11/30/2000	Prathap Haridoss	10964-043001/ Case 629	4182

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MINNEAPOLIS, MN 55440-1022

EXAMINER

CANTELMO, GREGG

ART UNIT	PAPER NUMBER
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1745

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.



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APPLICATION NO./ CONTROL NO.	FILING DATE	FIRST NAMED INVENTOR / PATENT IN REEXAMINATION	ATTORNEY DOCKET NO.
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EXAMINER

ART UNIT	PAPER
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Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner for Patents

Attached is a revised copy of the previous office action mailed March 15, 2007.

Gregg Cantelmo
Primary Examiner
Art Unit: 1745

DETAILED ACTION

Supplemental Office Action

1. In response to Applicant's request for clarification of issues in the office action mailed March 15, 2007:

- a. Claims 1-5, 21-22 and 25-32 are pending and rejected under 35 U.S.C. 103(a) set forth in the previous office action.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

Art Unit: 1745

not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1-5, 21-22 and 25-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. patent No. 4,017,663 (Breault) in view of either JP '673 or Watanabe, all of record.

Breault discloses a fuel cell electrode comprising a catalyst, a first material of tungsten oxide (same first material as identified in the instant claims and thus inherently resistant to oxidation up to about 3 volts vs. SHE) and a non-electrolytic material different than the catalyst (col. 2, line 66 through col. 3, line 5 and prior art claim 6). The catalyst is distributed on the graphite *and tungsten oxide* (see prior art claim 1). The catalyst load is 0.25 mg/cm^3 (col. 3, ll. 40-45). The weight of the mixed catalyst and tungsten oxide is 80% with the balance being the Teflon polymer (col. 3, ll. 1-5 as applied to claims 1 and 21). The non-electrolytic material in this example is 20 weight percent Teflon i.e., polytetrafluorethylene (col. 3, ll. 3 as applied to claims 7, 8 and 10).

The electrode layer as defined in prior art claim 6 is in fact a single layer wherein the first material (tungsten oxide), noble metal catalyst material and fluoropolymer are all present (as applied to claims 1 and 21).

Also, the claim does not specify what is or is not the "non-electrolytic material". Thus in the alternative, the Teflon in the catalyst-polymer mixture described in col. 3, ll. 1-10 is non-electrolytic and acts as a support carrier for the catalyst material.

Art Unit: 1745

A first resistant material of tungsten oxide is also present in the electrode mixture. The noble metal catalyst is mixed with the tungsten oxide. Since the material is the same as those set forth in the species of the instant claims, the tungsten oxide in the prior art composition is expected to have the same properties. A chemical composition and its properties are inseparable. Therefore, if the prior art teaches the identical chemical structure, the properties applicant discloses and/or claims are necessarily present. In re Spada, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658. Where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a prima facie case of either anticipation or obviousness has been established. In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). See col. 3, ll. 3 and col. 3, ll. 26-31 of Breault as applied to claims 1 and 21).

The catalysts are Pt and Ru which are capable of catalyzing oxidation of a fuel cell gas and capable of undergoing reversible oxide formation (col. 3, ll. 1-2 as applied to claims 2, 4, 5 and 22).

The fuel cell gas inherently comprises hydrogen (as applied to claim 3).

The catalyst total weight is 64% (col. 3, ll. 1-5 as applied to claims 25 and 29).

The first material is tungsten oxide (as applied to claims 26-28 and 30-32).

Breault does not teach of the polymer material in the catalyst-polymer layer being a copolymer of FEP and HFP in a single layer including both the catalyst material and non-electrolytic material as now required in the amended claim.

Art Unit: 1745

JP '673 discloses using fluorine-contained resin binders such as PTFE or a tetrafluoroethylene-hexafluoropropylene copolymer (abstract). Watanabe discloses that the hydrophobic binder may be such hydrophobic material as polytetrafluoroethylene (PTFE), tetrafluoroethylene-hexafluoropropylene copolymer (FEP) and polyethylene which gives the hydrophobicity, elasticity and porosity to the final electrode (col. 3, 11.19-32).

The motivation for using either PTFE or a tetrafluoroethylene-hexafluoropropylene copolymer is that they are equivalent fluorine-containing binders which provide hydrophobicity, elasticity and porosity to the final electrode.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Breault by replacing the PTFE binder with a tetrafluoroethylene-hexafluoropropylene copolymer since they are known equivalents in the art as suitable fluorinated binder resins which provide hydrophobicity elasticity and porosity to the final electrode. The selection of a known material based on its suitability for its intended use supported a prima facie obviousness determination in *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945) See also *In re Leshin*, 227 F.2d 197, 125 USPQ 416 (CCPA 1960). MPEP § 2144.07.

Response to Arguments

6. Applicant's arguments have been considered but are moot in view of the new ground(s) of rejection.

Art Unit: 1745

The previous amendment further required a single layer of both a catalyst and non-electrolytic material. This combination presented new limitations thereby permitting finality of any office action in response to this amendment.

Furthermore it is held that while Breault does not disclose of a single layer of both the catalyst material and copolymer, Breault does disclose of a single layer of catalyst material and a fluorinated polymer as discussed above.

The instant application itself teaches that the non-electrolytic material can either be a polytetrafluoroethylene or a fluorine-containing resin, such as a copolymer of tetrafluoroethylene and hexafluoroethylene (see page 6, ll. 25-26) and fails to show criticality for either of these materials compared to the other. Breault teaches of the electrolytic material in the single layer being polytetrafluoroethylene and each of the secondary references above teach that copolymer materials are known alternative fluorine-containing resins in catalytic layers. Thus both the combination of the prior art rejection of record and the absence of criticality for the copolymer over that of polytetrafluoroethylene reasonably obviated the claimed invention.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of the previous office action mailed March 15, 2007. In

Art Unit: 1745

the event a first reply is filed within TWO MONTHS of the mailing date of the previous final action mailed March 15, 2007 and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of the previous final action mailed March 15, 2007.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregg Cantelmo whose telephone number is 571-272-1283. The examiner can normally be reached on Monday to Thursday, 8:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



4/30/07
GREGG CANTELMO
PRIMARY EXAMINER